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Putting the User First? A pioneering Scottish experiment in architectural research

This article traces the story of a unique Scottish experiment in Modernist architectural research in the 1950s, 1960s and 1970s: the Architecture Research Unit of Edinburgh University, one of the leaders in the UK's post-war efforts to expand the academic and professional knowledge base in architecture. One of the few architectural research and development groups based within a university, the unit was one of a series of wide-ranging initiatives by Scotland's leading Modern architect, Robert Matthew—whose pivotal role in 1970s Scottish conservation was traced in a previous issue of *Architectural Heritage* (XVI: 2005). In this case, in his academic capacity as Professor of Architecture and Head of the newly founded Department of Architecture at Edinburgh University, Matthew initiated and personally oversaw the activities of the Unit. This was set up in 1959, flourished intermittently throughout the 1960s, but rapidly withered away after Matthew's death in 1975. Originally, and up to 1965, it was known as the 'Housing Research Unit,' with the abbreviations HRU and EARU being used below. The Unit's work exemplified the modernist insistence on social engagement through 'user studies' as the focus of all architectural research. It not only designed new housing schemes (and, later, other building-types) throughout Great Britain but also comprehensively researched their post-completion use and the experience of their inhabitants as the foundation for the design of further projects. The EARU was created in a specific cultural and institutional context, dominated by the state in its various forms, which was significantly different from that of today. However, its story also presaged present-day trends in one or two unexpected ways and thus provides some lessons that might help bridge the current gap between the discipline of architecture, as researched in academia, and the practice of architecture by today's private practitioners.¹

INTRODUCTION

During the initial three post-war decades, the dominant ethos within British architecture was that of the Modern Movement, with its utopian aspiration towards a rational social progress informed both by science and by humanistic idealism. In contrast to most previous phases of architecture, governed by relatively empirical or traditionalist approaches, the 'Functionalist' Modernism of the wartime and early post-war years demanded that design should be based on exact or optimal norms established by scientific research. The focus

of this research included not only the construction and equipment of buildings – the sole concern of traditional building manuals or handbooks – but also the experience of the buildings by their users, something previously taken for granted or seen as an abstraction. Robert Matthew, Scotland's foremost Modernist architect, argued in 1958 that the aspiration of the Modern Movement must go far beyond the old tasks of designing beautiful buildings that worked well: now, the aim was no less than that of 'solving, architecturally, the most difficult of social problems'. With this social-utopian aim in mind, research into the user was not only essential, but became the central ingredient in a circular process of research and practice: building projects, designed in the light of previous user research, would then provide the material for fresh user studies that would inform future projects.²

To implement this ambitious agenda systematically, a new type of multi-disciplinary research and development organisation would be needed. Here, although the initial impetus stemmed from the avant-garde private architectural and planning research groups of the 1930s (such as the MARS group, founded 1933 or Tecton, 1932), the real breakthrough came during World War II when the state took over large areas of national life and forced through programmes of co-ordinated resource-planning and scientific research in pursuit of the 'war effort'. A proliferation of built-environment research and development groups inspired by this 'combined operations' ethos suddenly sprang into being, beginning with the wartime initiative by Leslie Martin in the London, Midland and Scottish Railway, and spreading like wildfire in the late 1940s and early 50s among the local and national government organisations that spearheaded the post-war 'reconstruction drive'. Key examples included the on-going work of the Building Research Station; the development groups led by Stirrat Johnson-Marshall at Hertford County Council in 1945–8 and in the Ministry of Education in 1948–56; the housing research and development group set up by Robert Matthew in 1950, during his time as Architect to the London County Council (and initially headed by Oliver Cox followed by A. W. Cleeve Barr); and the Nottinghamshire County Council schools design group set up in 1955 by Donald Gibson and in 1957 extended nation-wide under the acronym 'CLASP'. Between 1957 and 1964, most British ministries set up their own development groups on the same model. Within the most design-orientated public authorities, such as the LCC or Cumbernauld New Town Development Corporation (from 1956), the entire building programme constituted, in effect, a vast research and development initiative.³

In all this, the initial preponderance of effort and achievement was firmly grounded within the reformist social-democratic state, in its role as patron and (often also) as design agency. But with the beginnings of economic recovery in the early and mid 1950s, the pendulum began gradually to swing back away from large-scale state-led command planning towards the private sector, both in patronage and in focus within the architectural profession. Public building projects, far from withering away, increased in

scale and complexity in the late 1950s and 60s, with initiatives such as the new universities programme in prospect. However, the initiative in designing and planning them increasingly passed to a new kind of multi-disciplinary private practice set up by former leaders within public-authority architecture. Of these, the first to 'jump ship' was Robert Matthew, who left the LCC in 1953 to establish his own private practice and take up a chair of architecture at Edinburgh University. This position was initially combined with the headship of his old school of architecture at Edinburgh College of Art, but soon (in 1956) was built up into a new and autonomous 'break-away' Edinburgh University department of architecture.⁴

The 1950s also saw the beginnings of a parallel change within architectural theory, with a gradual decline in the prestige of the rationalist collectivism of the Functionalist strand of Modernism, with its reliance on planning and scientific research, and a rise in more 'poetic' or individualistic interpretations of Modernism, led by figures such as Denys Lasdun or the Smithsons. Within the field of architectural research and development, this growing uncertainty over the standing of 'scientific research' carried out by state bureaucracies was indirectly reflected in the emergence of two new categories of Modernist research organisation during the 1950s: the large, multi-disciplinary private practice, inspired by large and highly methodical American practices such as Skidmore, Owings & Merrill, whose own integrated research capacity was empirically concerned with the work at hand; and the academic research and development unit, based wholly or partly in a university architecture department.⁵ In both these areas Robert Matthew played a decisive role: in the first instance, through the phenomenal growth and success of the Edinburgh-London partnership he founded in 1956 with Stirrat Johnson-Marshall; and in the second, through his establishment in 1959 of an ambitious Housing Research Unit, initially funded by a philanthropic agency but attached to his Edinburgh University department. The work of this unit over the ensuing decade and a half is the main focus of this article.

NUFFIELD REVISITED: FROM HOSPITALS TO HOUSING

The story of architectural research within British universities began in the 1930s, when E. A. A. Rowse moved from Edinburgh College of Art (ECA) to the Architectural Association in London and, as part of his strategy of radical Modernist reform from 1936, encouraged students to undertake ambitious urban reconstruction studies, and established the semi-autonomous School of Planning and Research for National Development (SPRND). Elsewhere, the same years saw a more limited, evolutionary development of research activity within the former Beaux-Arts stronghold of the Liverpool School, directed from 1933 by Lionel Budden.⁶ Following World War II, money was too short to permit architecture schools to set up their own fully-fledged research units. One alternative approach was the joint-venture research initiative, in collaboration with the philanthropic or private sectors. Here the pioneer was the ambitious investigation of modern hospital planning, set up by the Nuffield Provincial Hospitals Trust and Bristol



4.1 As part of Matthew's drive to establish his new department as a premier centre of architectural research, he secured numerous visits from eminent international Modernist figures. Here, for example, he is seen with Pier Luigi Nervi and interpreter during Nervi's stay as visiting lecturer in 1960. (University of Edinburgh Architecture Department)

University and directed from 1950 by the Functionalist (and former communist) architect-researcher, Richard Llewelyn-Davies. Its publications largely set the agenda for the next two decades of 'scientific' hospital design, and Llewelyn-Davies became an influential private practitioner specialising in hospital design consultancies.⁷ In 1958, the Oxford Conference on architectural education, masterminded by Leslie Martin, had forcefully argued that architectural education should become a university matter, with research a central and integrated element. But even within the renowned Cambridge department built up by Martin following his appointment to a newly-created chair in 1956, it was eleven years before a fully-fledged 'Centre for Land Use and Built Form Studies' could be set up, still remaining as the Martin Centre for Architectural and Urban Studies today.⁸

It was in this period of research innovation within public bureaucracies and academia that Robert Matthew returned in 1953 to Edinburgh, at first to a joint post of ECA head of school and Edinburgh University Professor of Architecture (Figure 4.1). By 1956, however, following an insurmountable personality clash with the art college Principal, Matthew had

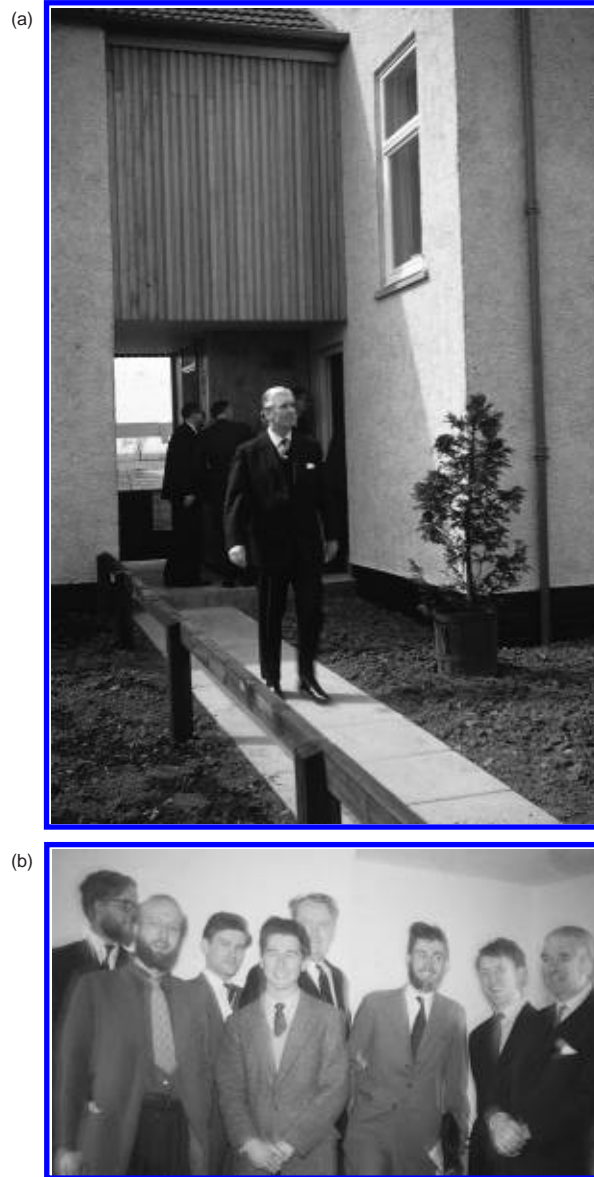
withdrawn from ECA to set up his own department at the university, dedicated to the ideals of interdisciplinary study and research that would dominate the agenda promulgated by the 1958 Oxford Conference. Matthew's first staff member in his new department, Patrick Nuttgens, had studied architecture and painting on a joint course at ECA and Edinburgh University (1948–53), and strongly reinforced the drive towards research. He later related that 'I said to him [Matthew], "Every other department in the University is doing research, so we must too!"'⁹ Matthew's idea was to begin postgraduate teaching and research simultaneously: the teaching would cover the two key areas of town planning and landscape architecture, and the research, to be carried out by an autonomous unit, would focus on the area that had dominated his work in London: mass housing. The aim, in effect, was to set up a housing equivalent of Llewelyn-Davies's hospitals unit, but more closely attached to a university department. According to Nuttgens, for Matthew research meant 'research on housing: he [Matthew] saw housing as the key to modern social architecture.'¹⁰

Thus, from the inception of his department in 1956, Matthew and Nuttgens began an energetic programme of lobbying research funding bodies in Britain and the United States of America. By 1958, a five-year grant of £60,000 from the Nuffield Trust had been secured, together with some smaller amounts from the Department for Scientific and Industrial Research and the University of Edinburgh.¹¹ In pursuing his agenda, however, Matthew faced the competing demands of his vast range of other commitments in Britain and abroad. As a result, he never really took the time to ascertain fully how the university worked and managed its financial affairs—something that was of some importance, given the lack of precedent for a practice research-based group in Edinburgh University or anywhere else in Britain.¹²

THE EARLY YEARS: HOUSING RESEARCH UNIT (HRU)

Fortified by the assurance of grant income, Matthew was initially able to take on staff for his intended postgraduate teaching and research initiatives from 1959, with the Housing Research Unit being allocated a full 50% of the Nuffield grant (Figure 4.2).¹³ The HRU was launched as a 'practice that was more than a practice.'¹⁴ It began with several key policy objectives, carrying each out through practice-based research. These included an interest in private and public housing tenure and its implications for maintenance, management and design. Initial projects, typically of Functionalist research, focused not on the design of buildings but on the spaces around buildings and how they were used, and also on identifying post-occupancy user responses in housing schemes.

To direct the HRU, Matthew engaged Eric Stevenson, an architect-planner he had known since 1945. Working in 1958 as a regional planning officer within the Department of Health for Scotland, Stevenson brought with him two potential sites for prototype developments, at Cumbernauld New Town and Prestonpans.¹⁵ Two other senior



4.2 The 1961 opening of the Scottish Special Housing Association's Pinkie Braes development, Musselburgh – Matthew's department's first 'student live project', and subsequently the subject of a Research Unit user-study investigation: (a) View of Robert Matthew leaving the 'demonstration house' (43 Galt Crescent), showing the innovative set-back terraced design and pend-entrance. (University of Edinburgh Architecture Department) (b) Matthew seen with HRU staff member Reg Gray (taller, in back row) and undergraduates inside the house. (University of Edinburgh Architecture Department)

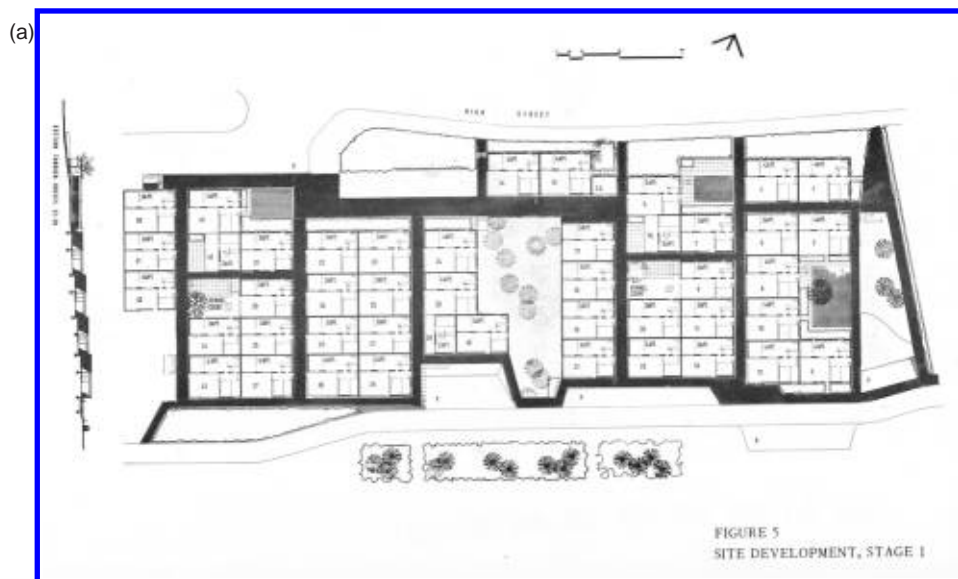
appointments were made to the Department in parallel with Stevenson: Percy Johnson-Marshall to teach planning, and Frank Clark to teach landscape architecture. Both were appointed as senior lecturers, and, in an attempt to entrench the embryonic research unit firmly in the university structure, Matthew also referred to Stevenson as a 'Senior Lecturer'. However, Stevenson was not, strictly, an academic staff member at all, and his official title was that of 'Director'.¹⁶ This seemingly trivial inaccuracy in the use of titles points to one of the major problems the unit faced throughout its existence in relation to the University of Edinburgh—as we will see below.

Along with the appointment of Stevenson as HRU director, three research assistants were taken on board initially: Roland Wedgwood, who had spent three years at the Building Research Station; M. J. Calthorp, directly from the office of Robert Matthew Johnson-Marshall; and J. A. Gray, a graduate of ECA.¹⁷ Also engaged were Norman Dunhill, a sociologist; A. Zammit, a research student from Malta; A. W. Winkle, a Quantity Surveyor; and A. C. Paterson as a technical assistant.¹⁸ Stevenson's relationship with other HRU staff was a stormy one, leading in 1961 to demands for his resignation, a subsequent schism in the Unit and the eventual resignation of Wedgwood and Nuttgens. The conflict was eventually settled in 1961, when Stevenson was encouraged to move over to teach architectural history in the department and Percy Johnson-Marshall was made director of the Housing Research Unit *pro tem*, while efforts were made to find a new permanent director. Charles Robertson, an assistant of Sir Basil Spence on the large multi-storey housing project Hutchesontown 'C', was taken on in 1962 as the architect for the Cumbernauld project, and eventually become full-time Director of the Unit in 1965. In the meantime, Percy Johnson-Marshall had established his own Planning Research Unit in 1962,¹⁹ as well as acting as head of the Architecture Department for the two years of Robert Matthew's presidency of the Royal Institute of British Architects (1962–4).

Despite these internal problems, the HRU was responsible for two significant housing developments in its early years: a group of low-rise medium-density houses at Prestonpans (for East Lothian County Council) (Figure 4.3); and a substantial housing scheme in the New Town of Cumbernauld (for the New Town Development Corporation). Both fell squarely into the nation-wide trend in the early 1960s for such research units, led by architects who generally detested the growing trend of mass building of builder-designed 'package deal' multi-storey flats, to proselytise the cause of lower-rise alternatives.²⁰ The scheme at Inchview, Prestonpans (completed in 1962) involved the design and construction of forty-five single storey courtyard houses, working with innovative ideas of layout and the residents' use of open and private spaces. Given the HRU's primary interest in user studies, and in the detailed design of the spaces in and around the buildings,²¹ its members spent almost three years surveying the tenants (and ex-tenants) of the Inchview scheme, recording their observations. The findings of this project were published in a report published in April of 1966 entitled *Courtyard Houses, Inchview, Prestonpans*,²² which

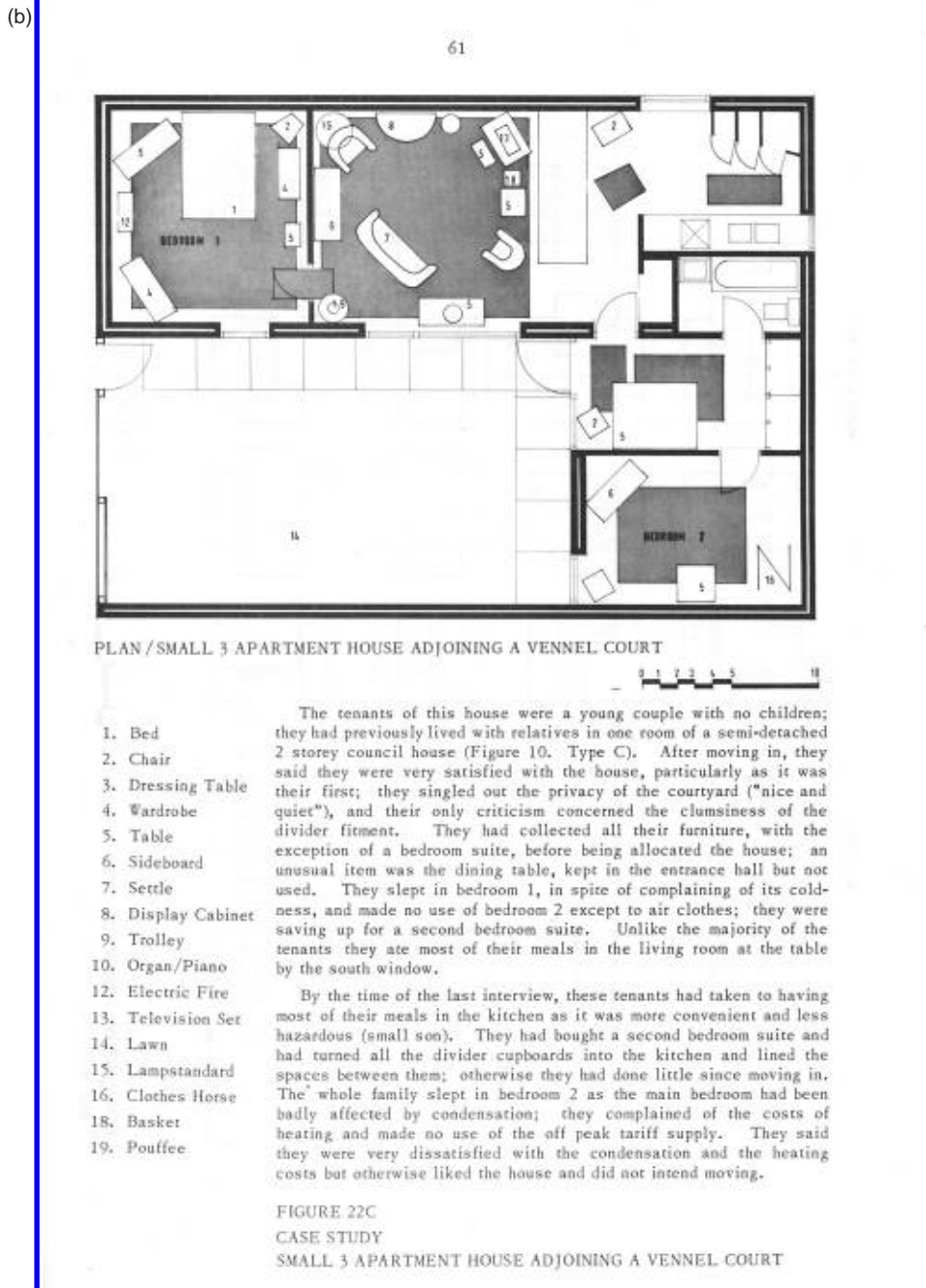
included recommendations to guide future housing schemes of this nature. One of the main complaints of the scheme made by tenants was the lack of washing facilities and the provision of sheds.²³ Once the initial scheme was completed along with the post-occupancy survey, the possibility of a 45-house extension to the west was discussed, but no progress was ever made.²⁴

The HRU's Park 3 West scheme at Cumbernauld also had its successes and difficulties (Figure 4.4). The first preliminary discussions on this project as a potential research exercise took place as early as 1957, but were only finalised in September 1959. In the beginning the



- 4.3 A selection of extracts from the Research Unit's report (John and Connie Byrom, *Courtyard Houses, Inchview, Prestonpans, Edinburgh, 1966*) on its first project, for 45 single-storey houses for East Lothian County Council at Prestonpans in 1961–2. The project adopted a complex, dense courtyard layout of 'patio houses'—a 'low-rise high-density' pattern first pioneered in Adalberto Libera's *Tuscolano III* development of 1950–4 in Rome, and introduced to Scotland at Shaw-Stewart, Baikie & Perry's *Leith Fort, 1958–66*. (a) Layout plan and section of the Inchview site developed by the HRU: the houses are L-shaped, and the plan shows the house number on each courtyard. (University of Edinburgh Architecture Department) (b) Detailed plan of one of the courtyard houses, showing the occupant's own arrangement of furniture and feedback on the house. (University of Edinburgh Architecture Department) (c) Drawings made by Inchview child resident of her own house (bottom two) and of her grandmother's conventional 1950s two-storey council house (top two). (University of Edinburgh Architecture Department) (d) A selection of house interiors 'in use', including one (top left) of a HRU interview in progress. (University of Edinburgh Architecture Department)

PUTTING THE USER FIRST?



4.3 Continued.

(c)

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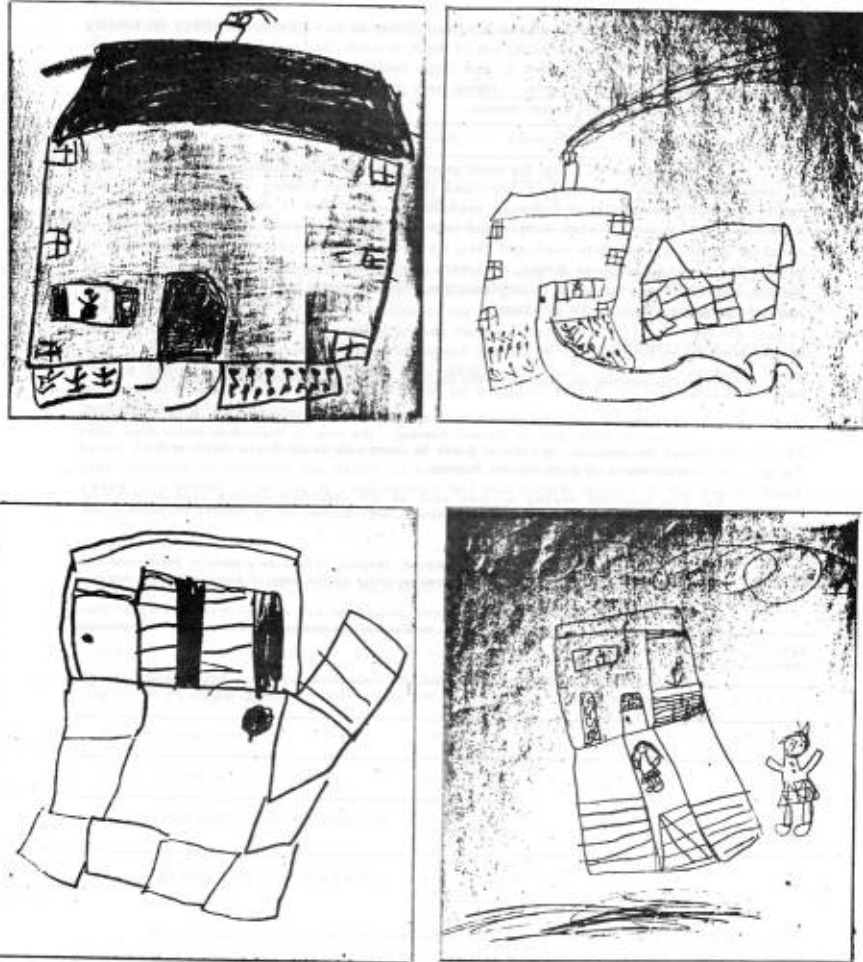


FIGURE 34
DRAWINGS MADE BY THE FOUR YEAR OLD DAUGHTER
OF ONE OF THE TENANTS: THE LOWER TWO DRAWINGS
REPRESENT HER COURTYARD HOUSE AND THE UPPER
TWO REPRESENT HER GRANDMOTHER'S HOUSE.
(See Figure 10, type C)

4.3 Continued.

development was seen as an experiment in different tenures, this being a major focus of the HRU's work.²⁵ Three identical schemes were to be constructed, each with a different form of tenure: one to be under private ownership, unheard of in Cumbernauld at the time; one to be publicly owned; and the third under housing association ownership, as it was thought at the time that such organisations could play a much larger role in housing tenancy. The full experiment, however, was not to transpire: the General Manager of the Cumbernauld Development Corporation wrote to Matthew in December 1964, explaining that there was not enough money to follow through on the project.²⁶ This may not have been the only reason, however, as the idea of private ownership was not looked upon kindly and the 'experimental' nature of the scheme was seen as a considerable risk.²⁷

As project manager, Robertson's job was to create something viable from the wide range of the Unit's ideas already on paper and carry the Cumbernauld concept through in practice. Having secured the commission only in a scaled-down form, the HRU had to proceed with it, as the income to be earned from the Cumbernauld project was crucial. With these fees, the activities of the Unit would be assured until March 1964, albeit on a reduced scale only for a year after that.²⁸ This was important as, just a few months earlier, the Unit was told that no new staff were to be appointed as the rate of expenditure was as high as could be permitted, given the estimated projected income from 1963 to 1966.²⁹ Robertson hoped that the Unit's financial position could be stabilised either by its appointment to design a follow-up scheme at Cumbernauld Park East or from further funds from the Nuffield Trust – neither of which materialised.³⁰ Although not built in the form originally intended, Park 3 West was nevertheless quite successful: not only did the HRU-designed housing win a Saltire Award, but in 1981 the Conservative government began its policy of selling public housing and Park 3 West was the first of all areas in Cumbernauld within which houses were purchased by residents. The HRU, in using the live project as a research vehicle, was predominantly interested in three things: *layout*, especially a vehicle free housing layout; *usable housing space*, attempting to create more useable living area through allowing private open space for each house; and *construction*, investigating factory produced system building that could produce a high standard of prefabricated elements at lower cost.

In 1961, the Rowntree Memorial Trust offered to finance a Fellowship for the study of housing built and owned corporately by its occupants.³¹ The Fellow would take responsibility for running a Housing Trust (independent of the university). Norman Dunhill, sociologist to the Unit between 1959 and 1962, volunteered for this position, and subsequently became the executive officer and secretary of the Adam Housing Trust in 1963 (Figure 4.5).³² The HRU hoped that the newly-formed Trust would initially support a scheme of thirty houses in East Lothian, but there is no further documentation of this scheme, apart from some unidentified and undated plans.³³ With Dunhill's acceptance of the Fellowship he relinquished his appointment with the HRU, although the pioneering

(d)



A. The livingroom of house No. 42 showing:
(i) position of fitted fire in centre of south wall.
(ii) the interview situation.



B. The kitchen recess of house No. 28 showing:
(i) the curtain track divider, unused.
(ii) the extra table.



C. The kitchen recess of house No. 16 showing the slat screen divider fitted by the tenant's son.



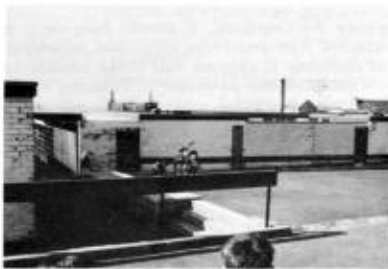
D. The bathroom of house No. 42; the tenants had papered the walls and boxed in the W.C. waste; they had been unable to fit a towel rail on the back of the door as the jamb was hard against the side wall.

4.3 Continued.

PUTTING THE USER FIRST?



E. The courtyard of house No. 42 with its front fence left unboarded to allow an unobstructed outlook on to a vennel from within the living-room; the tenant thought this outlook was too dull.



F. House No. 28 with the front boarded up by the tenants and the side gate bolted, to prevent children and dogs coming in; the tenants complained of feeling "hemmed in" by the adjacent vennel.

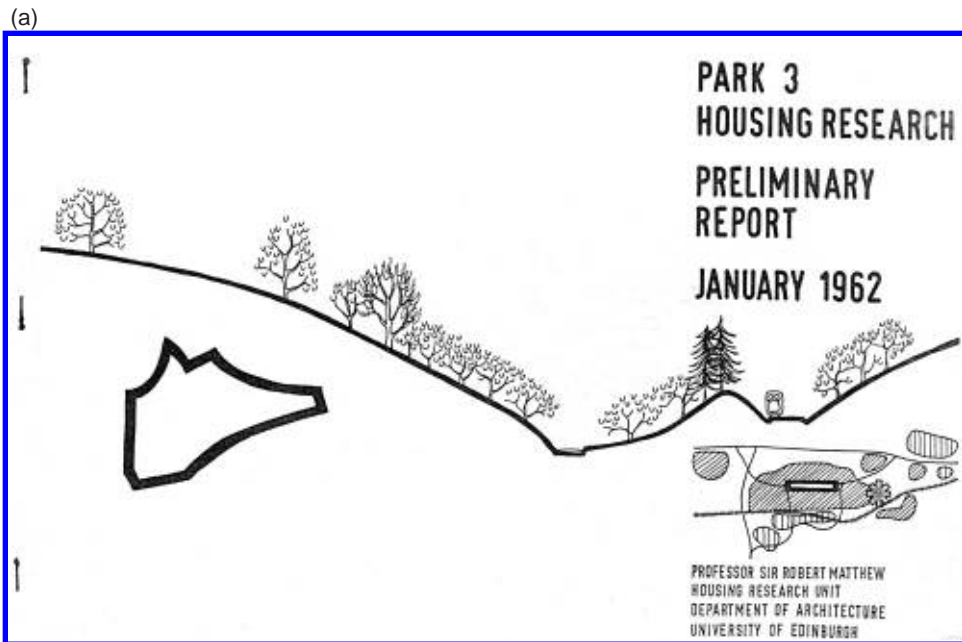


G. Looking towards the living-room south light window of house No. 16; protecting bars fitted across this window only encouraged children to climb up and peer through window.



H. The living-room of house No. 28 showing corner position of television set and full height shutter fitted by the tenant.

FIGURE 35
GENERAL DETAILS / 2 APARTMENT HOUSES



4.4 (a) Front cover of a 1962 report on the Park 3 development, Cumbernauld New Town: 198 courtyard houses and three-storey flats, designed by the Research Unit for the Development Corporation, and built in 1963–5. (University of Edinburgh Architecture Department) (b) 2007 view of one of the pedestrian covered ways in Park 3 West, showing the complex interlocking plan of dwellings and footpaths. (M Glendinning) (c) 2007 external view of courtyard houses in Park 3 West. (M Glendinning)

role of the unit, and subsequent work of Dunhill, was significantly innovative in promoting alternative housing tenure and management arrangements.

THE LATER YEARS: EDINBURGH ARCHITECTURE RESEARCH UNIT (EARU)

Around 1965 the name of the HRU was changed to the Edinburgh Architecture Research Unit (EARU), in acknowledgement of the fact that the need for income had necessitated extension of the Unit's remit to other building types than housing—a significant dilution of its originally sharp focus—and potentially further afield geographically (Figure 4.6). One such type was the university laboratory: the unit obtained a commission to build an extension to the Zoology Department at the University of Edinburgh, which led to research into different laboratory layouts that was innovative and subsequently influential. This building was completed in 1966 under project architects Edward Taylor and Thomas Henney. Following the Zoology Department extension, EARU was commissioned by the Medical Research Council to design the Mammalian Genome Unit, again with Henney

PUTTING THE USER FIRST?

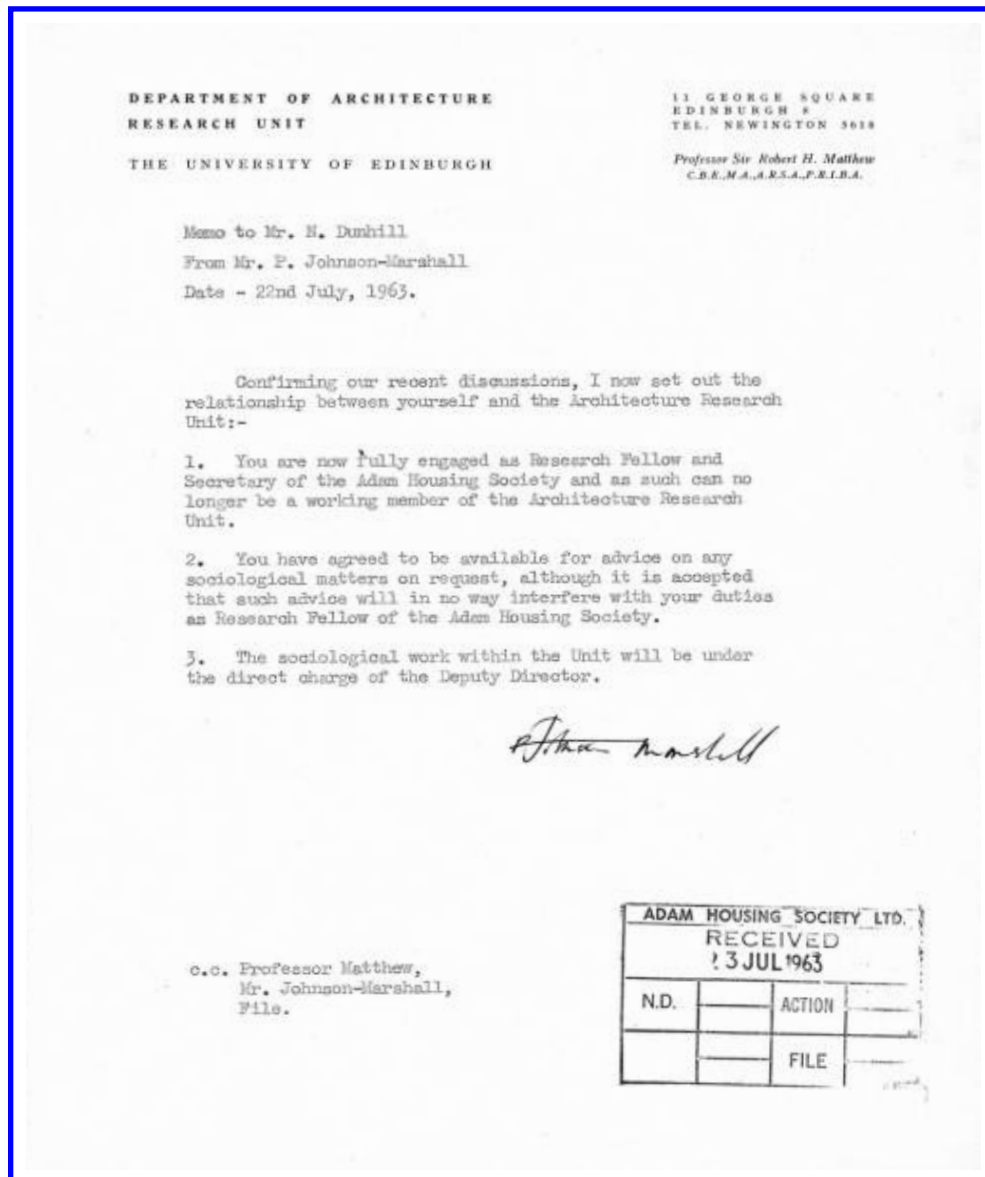
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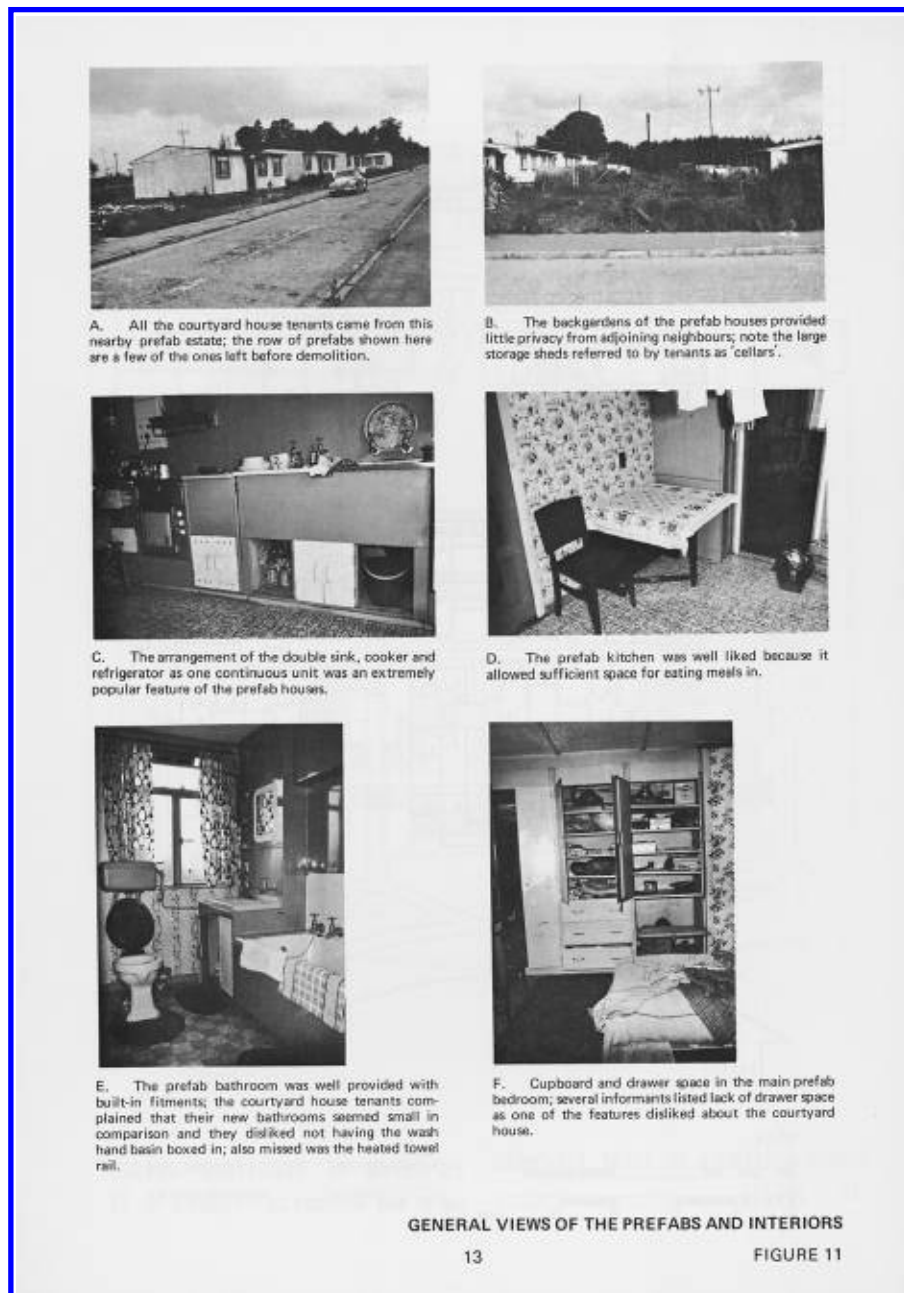


4.4 Continued.



- 4.5 Letter from Percy Johnson-Marshall to Norman Dunhill, finalising the latter's 1962/3 move from the Research Unit to a philanthropic housing association (where his responsibilities included the first rehabilitation work on the 18th-century tenements of New Lanark). (University of Edinburgh Architecture Department)

PUTTING THE USER FIRST?



- 4.6 Extract from the Research Unit's report (Connie Byrom, *Privacy and Courtyard Housing*, Edinburgh, 1968) on a 1965 user study of a council scheme of patio houses at Ardler, Dundee, designed by Baxter, Clark & Paul. This page shows views of the tenants' previous accommodation, a 1940s scheme of AIROH aluminium prefabs. (University of Edinburgh Architecture Department)

as the project architect, with help from R. Miller. Widening its remit even further, the Department of the Environment gave EARU a grant in 1970 to record the performance of materials used in the Road Research Laboratory, Livingston. Subsequent to these laboratory and science buildings, in 1974 the unit was asked to produce a feasibility report for a 'Special Fluids Building' at East Kilbride. This building had to take into account the need for oilrigs, flow calibration test facilities for high-octane liquids and other such specialist equipment. EARU also opportunistically ventured into the core 'Nuffield' area of hospital design. In 1969 the unit, in partnership with Ove Arup & Partners and Steensen, Varming, Mulcahy & Partners, evaluated potential structural assemblies for hospital buildings. The aim was to devise a system of structural assembly and services distribution that would satisfy various functions within hospital buildings, taking into consideration the inevitable potential of growth and change, and the problems of the rapid obsolescence of hospital equipment.³⁴ For each commission EARU charged the normal statutory architectural fees, although, being linked to an academic institution with no principals, there was no need to pay Corporation Taxes. Neither the university nor the Unit itself initially knew how to handle its unusual financial situation.

Matthew's initial intention was that the research unit would collaborate with any subsequent research activity in planning and landscape architecture, and this happened to some extent.³⁵ In the early 1960s, for example, the HRU became involved in the detailed implementation of the vast Ellor Street redevelopment in Salford, a project whose masterplan was being drawn up by Percy Johnson-Marshall and the Planning Research Unit (Figure 4.7). The HRU's task involved the design and construction of five seventeen-storey tower blocks (completed in 1967 for the City Council); the project was also designed to experiment in large prefabricated panels for housing, built by local contractor Fram as an architect-controlled alternative to a package-deal. The task, however, was not altogether agreeable to the HRU architects, strongly committed as they were to low-rise medium-density housing as opposed to tower blocks.³⁶ As the research unit's initial grant had finished, however, it needed to maintain a cash flow to support staff costs; the published outcome was a report by Aart Bijl in 1968 that reported on the basis for decision-making as a means to assess effectiveness. On being hired, Charles Robertson had taken hold of the reins of the research unit's finances as he had the practical experience of working outside of academia, but cash flow remained a difficult challenge given the unit's status.³⁷

However, Robert Matthew was a man with many friends and this was literally the lifeblood of the unit's continuity. Once the initial Nuffield grant had been used, the Unit had to take on architectural work to support itself as it was never integrated within the university structure (see below). Although it was able to obtain commissions, based on its own previous record of activities, to persevere past 1965 would not have been feasible without Matthew's connections, especially in London. One such link was with Edward Hollamby, a former LCC architect-planner and, from 1964, the first Borough Architect of the newly



- 4.7 Stage 8 of Salford City Council's Ellor Street Redevelopment Area, seen under construction in 1966. The £1.5m development, designed by the Research Unit, comprised five 17-storey tower blocks in large-panel concrete construction – a sharp contrast with the low-rise contracts that had previously preoccupied the Unit. Percy Johnson-Marshall, involved at Salford initially, in 1963, as Research Unit acting head and then as planning consultant, recalled later that 'one or two of the architects in the ARU complained that "the planners" had forced them into building high blocks, and I had to remind those chaps that both Robert Matthew and I were qualified architects, and also that it was not every day that you got five blocks handed to you to play around with!' (interview with M Glendinning, 1987) (University of Edinburgh Architecture Department)

founded London Borough of Lambeth. Through Hollamby, EARU won a commission to build 279 low-rise flats and maisonettes in the Flaxman Road area of Lambeth. In the event the Lambeth Council insisted on a higher-density development than that envisaged by the unit, but the project still went ahead, being undertaken mainly for income. However, as a result, it did not incorporate the same focus on investigation and follow-up as the earlier Prestonpans project.³⁸ Another London based project, at Juniper Street, Tower Hamlets, for the Greater London Council, ran along similar lines as that for Lambeth, although lower in density.³⁹

Another commission brokered by Matthew, through links to the Highlands and Islands Development Board (HIDB), was a campsite development at Glencoe where EARU

landscape architect John Byrom was chosen as the project leader.⁴⁰ Although several plans were drawn up over a period of two to three years, the HIDB was never able to decide on any of them, and the work only led to the publication of an interim report.⁴¹

In the early 1970s, EARU became involved in another major project, advising on the ongoing development of Livingston New Town: the unit was contracted for eight months from January 1974 to architecturally appraise the environmental standards of the area. EARU staff members Raitt, Peter Malpass, Anderson and Wilkie were responsible for critically assessing environmental achievements measured against the planning objectives of the new town, analysing and criticising the completed developments to that point in time, and examining the townscape from the point of view of the pedestrian and motorist. The final report, published under the name of EARU, was by David Heffernan. Another later appointment was by Lewisham Borough Council (August 1974) to investigate the problems of two high rise, high-density housing estates in the Deptford area. The aim was to closely consult with the tenants concerning potential estate improvements (primarily physical) and to implement as many minor enhancements as possible within the period of appointment (eight months, extended to a year) and within a fixed budget.⁴² This, however, was one of the last recorded activities of the unit, which petered out in the mid 1970s as staff found alternative employment one by one – for reasons to which we will return below.

THE RESEARCH UNIT AND WIDER NETWORKING⁴³

From almost the very beginning, an element of wider accountability for the research unit's activities was seen as essential and this was reinforced following its internal management difficulties in the early sixties.⁴⁴ To this end, four well-known housing experts, all friends of Matthew's, were invited to meet as an Advisory Board, starting in February 1962: these comprised his former LCC colleague A. W. Cleeve Barr, now chief architect at the Ministry of Housing and Local Government; David Donnison, sociology professor at the London School of Economics; T. A. Jeffryes, DHS chief architect in the 1950s; and Cumbernauld Chief Architect Hugh Wilson. The meetings of the board were perhaps something of a formality, as only one set of written minutes has been discovered.⁴⁵ Respect for the research unit was achieved more directly through wider cognisance of its activity and outputs, partly achieved through travel of staff, with funds provided by the Carnegie Trust for this purpose. In 1960, Roland Wedgwood undertook a housing tour of America, spending fifty days visiting five of the largest and five of the second largest cities in the United States and visiting academics and professionals at institutions and establishments across the USA.⁴⁶ Norman Dunhill was the next to travel abroad, on an HRU study trip to housing in the Netherlands, arranged by the Housing Centre in June 1962.⁴⁷

The unit also communicated with other institutions involved in housing research through mechanisms such as conferences. In April 1962, Charles Robertson was invited to present a paper at a Colloquium of Architectural Research and Development at the York

Institute of Advanced Architectural Studies—an event clearly designed to carry forward the Oxford Conference agenda.⁴⁸ Following this talk Robertson received a questionnaire from Liverpool University on architectural research in the UK, for use in a submission to the *Architects Journal*,⁴⁹ and some English academic professors contacted the Unit to notify them of the opportunity to meet other like-minded architects involved in teaching and research at a special session at the RIBA conference of 1962 in Coventry.⁵⁰ In January 1972, EARU, jointly with the Commonwealth Foundation, the Commonwealth Association and the University of Edinburgh, sponsored a well-attended seminar on Architectural Research in UK and Commonwealth Universities. Overseas delegates came from the School of Architecture in Ahmedabad, India; the Faculty of Architecture at the University of Science and Technology in Ghana; the Faculté de l'Amenagement of the Université de Montreal in Canada; the Housing Research and Development Unit of the University of Nairobi, Kenya; and the School of Architecture of the University of Sydney, Australia.⁵¹ EARU, in its own presentation, made clear the complications of setting up an architectural research body within an educational establishment, pointing out that only in 1971 had the unit begun to be integrated into the Department of Architecture, its teaching duties still remaining peripheral (see below).⁵²

Andrew Gilmour, a key member of the Unit in its later years, also formed links with Scandinavian housing associations, for whom he prepared two reports, the first funded by EARU itself, and the second partly funded by the Social Sciences Research Council (as one of the few EARU staff to have an official academic position, Gilmour had access to this form of funding). A further international link was established with the University of Illinois through Robert Katz, who had a specific interest in the Housing Research Unit. Katz visited the unit early on in its existence and subsequently began a not dissimilar operation under his own management in Illinois, called the Housing Research and Development Program. Katz, however, learnt from the mistakes of the Edinburgh research unit, and integrated his own architectural research unit firmly within the University.⁵³ This ensured a more permanent basis for the unit and permitted access to academic grant applications, something the EARU never resolved.⁵⁴ Andrew Gilmour subsequently spent a year at the Illinois Housing Research and Development Program working on housing issues for 'empty nesters'—people whose children had moved out of the family home. Again at variance to EARU, where the staff were responsible for hardly any official teaching, Gilmour's role in Illinois involved teaching each morning.⁵⁵

The research unit's contact with professional bodies was more restricted, an exception being the Scottish Office, in the form of the then Scottish Development Department (SDD), which itself had a thriving development group by the early 1960s. The two institutions collaborated to mutual benefit, with the SDD funding several projects, and the chief architect of the SDD, Bruce Beckett, liaising closely with Charles Robertson.⁵⁶ One example was a project that compared the provision, treatment, usage, management and maintenance

of open space in six medium-density housing schemes, undertaken by John and Connie Byrom. Beckett was a strong advocate of research in architecture as the basis for evidence-based policy, and even argued that every member of his staff should ideally have a PhD.⁵⁷

THE RESEARCH UNIT AND THE UNIVERSITY

In correspondence dating almost from the foundation of the unit in 1959, an important debate on the status of the relationship between the university and the research unit rumbled on for years. In a report some time after the Nuffield funding came to an end in the early 1960s, four propositions were put forward: firstly, that the unit should be recognised as part of the university's permanent establishment; secondly, that the university should guarantee the unit's financial position; thirdly, that the employees of the unit be given academic titles; and fourthly, that the unit staff be allowed to take on teaching responsibilities.⁵⁸ In fact only the last of these four recommendations was ever implemented, although the unit staff never took any great part in teaching. These propositions were partly a response to an earlier communication from the Secretary of the University, Charles Stewart, making clear that he did not see the research unit as a permanent part of the university.⁵⁹ He emphasised that the HRU employees were not on permanent appointment to the university and were not even paid by university funds, since they were funded from grants and earnings earned from practice activities. He even questioned the use of the term 'honorary', although he did look forward to a time when the unit staff would eventually become full members of the university.⁶⁰

The new teaching responsibilities of the mid-1960s, as listed in the 1965 Research Unit Progress Report, were slightly ambiguous. One project leader was responsible for providing assistance with studio instruction and supervision for all first year BArch students; a deputy director and project architect assisted the BArch students in the second year by drawing up a brief for a housing project and providing a seminar on housing; and for Percy Marshall's Civic Design postgraduate course, a deputy director and a project architect gave a winter seminar, studio instruction and supervision.⁶¹ In addition, the deputy director supervised two MArch students and one PhD student. Although this might at first glance seem like a substantial amount of teaching, however according to the report it totalled only approximately sixty hours for the whole of the research unit for the year. This view was reinforced in interviews with members of the unit, who could not remember having been involved with much teaching at all.⁶² The exception was Andrew Gilmour, an ex-LCC and RMJM man who joined the Unit later and who – importantly – was recruited by Matthew as an Architecture Department staff member soon after. His involvement in teaching was thus not as a research unit member, and he continued with his academic career after the demise of EARU, eventually becoming Head of Department.⁶³ Concerning the reciprocal involvement of students in the work of the HRU, this was also confined to only one investigation early on:⁶⁴ a social study of the Pinkie Brae housing scheme of 1962, including a survey of housing

layout and resident interviews with student involvement.⁶⁵ Robert Matthew was keen to develop such contact with students, but no other opportunity arose or was taken advantage of, even though ‘in those days, students could get involved with no questions asked’.⁶⁶

Overall, therefore, it never proved possible to integrate the research unit strongly into the university, other than through its physical presence in George Square near the architecture department, and through some minor contact between staff and students. The only real link was the personal one provided by Matthew himself. The lack of integration of the unit into the department was partly the result of resistance by university traditionalists to what they saw as ‘applied research’, and partly the result of Matthew’s informal *modus operandi*, which circumvented most institutional procedures, for example in the recruitment of staff and the reliance on commissioned work as a basis for income. So, while Matthew’s position (and personality) were originally the key to the unit’s existence, they were also largely responsible for its peripherality within academia. With limited policy-related research funding available, e.g. from public bodies, this led to a precarious existence where research was only possible as an adjunct to professional practice. Thus, what could have been a strength – being based in academic in contrast to the bureaucratic inflexibility of the well-established public-sector research groups – ultimately became a weakness.

MATTHEW’S DEATH AND THE DEMISE OF EARU

Why did the unit, after such a seemingly important initial research impact, eventually cease to exist? Different sources express conflicting points of view, making difficult any clear and concise analysis of its demise. As early as 1972, Charles Robertson left for an academic post in Australia, having become aware that EARU would have to shed staff to survive.⁶⁷ The university then apparently reneged on its promise to replace Robertson as Director and Matthew himself stepped in, but could only manage a limited input on two days each week. Although by now the ‘vultures at the university were ready to pounce’,⁶⁸ the Unit was definitely still in active existence in 1974, as a list of current projects at the time mentioned several with years still to run.⁶⁹ However, that year marked a decisive and final downturn in Matthew’s relationship with his brainchild. At that time, six years after he was eased out of the departmental headship (being replaced in 1968 by Guy Oddie), Matthew finally resigned his personal chair of architecture at the university. On giving up the headship in 1968, he had insisted on remaining chairman of EARU as one of his two remaining university responsibilities (the other being the development and direction of an interdisciplinary ‘School of the Built Environment’ that would integrate architecture with engineering, geography, etc.). His final withdrawal to an emeritus professorship was followed, in rapid succession, by his sudden affliction with cancer in December 1974 and his subsequent death on 21 June 1975. Matthew’s withdrawal from the department proved the death-knell for the research unit.⁷⁰ Although, in a letter at the time, he expressed hopes that ‘the recent discussions will allow GO [Guy Oddie] to incorporate the unit firmly in the

structure of the Department, as I believe, with him, that it gives an unusual and valuable aid to teaching', in fact Oddie was not very supportive of EARU,⁷¹ and only agreed to write to the University Secretary advocating retention of the unit after forcible pressure from Andrew Gilmour. Nevertheless, without Matthew's contacts, the supply of work dwindled and gradually petered out, as did the unit by the late 1970s, without any official or formal closure.⁷²

That said, however, the research unit's work arguably lived on in the fact that some EARU staff-members subsequently went on to do significant things in relation to teaching and research in areas of relevance to architecture. For example, John Byrom carried on to become head of the Landscape Department at Edinburgh University; Peter Malpass became one of the foremost names in academia on UK housing policy; Pat Bagot, a trained social worker, went on to work at senior level in housing at the Scottish Executive, now, Scottish Government; another later staff member John Gibbons became the Chief Architect within the Scottish Executive (and prime mover in the controversial new Scottish Parliament project); and Aart Bijl became one of the early names in computer-aided design. Bijl formed a solid relationship with the Scottish Special Housing Association through an early study of computer use in the 1970s, and was able to build a permanent and valuable foundation for his experimental work, with SSHA funding, to study computer-aided design. This led to the creation of the Edinburgh Computer Aided Architectural Design Research Unit, which again was kept distinct institutionally from the university but continued well after EARU had ceased to exist.

In retrospect, although HRU and EARU were clearly Modernist institutions in their general ethos, it was the research unit's problems with funding that led it to be quite pragmatic in its approach to research and link research with practice. Importantly, it was the correlation of applied social science and user studies in housing (and, later, in other building types) that was its main academic research contribution – in contrast, for example, to Leslie Martin's Cambridge centre, which focused on natural science and technology-related environmental studies. As such, the closure of the research unit left a significant gap, not only for social studies in architecture in the UK, but also between the practice of the profession of architecture and the development of the discipline's knowledge base – something much more obvious today than in the early days of university incorporation of architectural education in the 1960s and 1970s when the unit existed.

CONCLUSION – CHANGE OR CONTINUITY?

The Edinburgh research unit was set up in the heyday of the welfare state, at a time when social science was first becoming fully consolidated within academia, and architectural education was becoming incorporated within the university academic system. Yet arguably, as noted above, the late 1950s were already witnessing some tendencies towards 'privatism' in the organisation of architectural research and development, especially seen in the

shift away from bureaucracy-based research towards more ad-hoc, and, ultimately more ephemeral, academic or private-practice research initiatives. These tendencies were fully exemplified in the post-1953 work of Robert Matthew and the story of HRU/EARU.

So, although all this has now gone much further, with the state retrenching to a policy guidance and regulatory role over a dominant private sector in architectural practice, and with social science re-evaluating its former grand designs of predictive theorising within academia, this historical study is by no means without its lessons for today. Some are lessons of failure: for example, adequate government or private funding for applied academic research in architecture, to ensure consistency and stability, was not secured, nor were channels for this clearly available. Others are, arguably, lessons of relative success: such as, above all, the need for a multi-disciplinary and inter-institutional approach that can pull/push academics out of working in disciplinary ‘silos’ and engage researchers with those who make and implement policy, or who actually construct or use the built environment. It was, after all, this aspiration towards an engagement between ‘thinkers’ and ‘doers’ that was one of the central elements of Robert Matthew’s philosophy of Modernist architectural education and research. These successes and challenges have changed, but not so fundamentally – indeed they have probably deepened in their impact – and it is salutary to see how they were dealt with some four decades ago. Hopefully we can learn from this experience and encourage more inter-disciplinary research in architecture – as well as that with a social focus – in higher education institutions across Scotland and the UK, which was the original intention in undertaking this study.

NOTES

1. Based on archival research and interviews with key participants in the Research Unit in late 2006, this paper stemmed originally from an investigation into the position of present-day architectural research in Scottish higher education institutions, carried out by the Scottish Matrix for Architectural Research and Knowledge (ScotMARK) – an analysis which concluded that a closer study of the past history of architectural research in Scotland was essential in order to fully understand the problems and opportunities of today. Dr. Paul Jenkins (Professor of Architecture & Human Settlements at the School of the Built Environment in Heriot-Watt University and Co-ordinator of ScotMARK) led on the research with Dr. Soledad Garcia Ferrari, Lecturer in the School of Architecture at Edinburgh College of Art and initial Research Associate in ScotMARK and the article was written in collaboration with Dr. Miles Glendinning, Reader in the School of Architecture at Edinburgh College of Art. The authors would like to acknowledge a Small Research Grant made available by Edinburgh College of Art, which made it possible to employ Jessica Taylor as an additional researcher on this study, drawing on the archival material.

2. Robert Matthew, quoted in foreword to A. W. Cleeve Barr, *Public Authority Housing*, London, 1958; M. Glendinning and S. Muthesius, *Tower Block*, New Haven and London, 1994, pp. 10–13, 22–3, 110.
3. N. Bullock, *Building the Postwar World*, London, 2002, pp. 9–21, 221–8; J. Gold, *The Experience of Modernism*, London, 1997, pp. 110–13, 145–61, 166–85; A. Saint, *Towards a Social Architecture*, New Haven/London, 1987, pp. 7–14, 96; ‘The Story of Clasp,’ *Ministry of Education Building Bulletin* 19, June 1961; G. Oddie, ‘The New English Humanism: Prefabrication in its Social Context,’ *Architectural Review*, September 1963, pp. 180–2.
4. Bullock, *Building the Postwar World*, p. 245.
5. See for example E. Danz, *Architecture of Skidmore Owings & Merrill, 1950–1962*, London, 1963, p. 10.
6. Gold, *The Experience of Modernism*, pp. 92–3, 142–4; Saint, *Towards a Social Architecture*, pp. 7–14; P. Richmond, *Marketing Modernisms: the Architecture and Influence of Charles Reilly*, Liverpool, 2001, p. 151; A. Powers, ‘Liverpool and Architectural Education in the Early Twentieth Century,’ in J. Sharples (ed.), *Charles Reilly and the Liverpool School of Architecture*, Liverpool, 1996, pp. 17–19; Bullock, *Building the Postwar World*, pp. 40–1.
7. Llewelyn-Davies: Saint, *Towards a Social Architecture*, p. 4; *Who’s Who*, London, 1964, pp. 129–30. Nuffield Provincial Hospitals Trust, *Studies in the Function and Design of Hospitals*, 1955; *Architectural Review*, June 1965; J. F. A. Hughes, ‘The Brutal Hospital: Efficiency, Identity and Form in the National Health Service,’ PhD, Courtauld Institute, London, 1996, pp. 39–58.
8. P. Carolin and T. Dannatt (eds), *Architecture, Education and Research*, London, 1996, pp. 116–17.
9. M. Glendinning, *Modern Architect: The Life and Times of Robert Matthew* (RIBA, London, 2008), chapter 6.
10. Interview by M. Glendinning with Patrick Nuttgens, 1995.
11. The Housing Research Unit also obtained a smaller sum of money, some £2,500, from the Carnegie Trust specifically for travel.
12. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.
13. The Housing Research Unit’s money was increased by £3,600 from December 1960: H. R. Wedgwood, ‘Brief Financing Statement for the Housing Research Unit,’ 15 August 1961, Percy Johnson-Marshall Collection, Edinburgh University Library.
14. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.
15. Interview by ScotMARK with John and Connie Byrom and Roland Wedgwood, Spring Gardens, Edinburgh, 9 August 2006.
16. *The Builder*, 26 February 1960, p. 411.
17. *The Builder*, 26 February 1960, p. 411.
18. *The Builder*, 26 February 1960, p. 411, and Glendinning, *Modern Architect*, Chapter 8.

19. The Planning Research Unit undertook local plans for Lothian, Falkirk and Grangemouth and in 1967 was involved in the Borders plan, when it was described as being near to closure (*Building*, 21 April 1967). The Planning Research Unit and the HRU/ARU moved to adjoining buildings at 56 and 57 George Square in the 1960s, which facilitated interaction between staff, but there was collaboration on only one project, that of the Ellor Street, Salford, development, which is discussed in the text.
20. Glendinning and Muthesius, *Tower Block*, pp. 183–93.
21. Architecture Research Unit, *Publications and Current Projects*, Edinburgh, 1970.
22. Architecture Research Unit, *Courtyard Houses, Inchview, Prestonpans (A1:R1)*, Edinburgh, April 1966.
23. *Courier*, 11 January 1963.
24. Mentioned in *Courier*, 11 January 1963, but nowhere else.
25. Interview by ScotMARK with Charles Robertson at ECA Grassmarket Campus, Edinburgh, 9 August 2006.
26. Letter from G. R. B. MacGill, General Manager of the Cumbernauld Development Corporation, to Robert Matthew, 17 December 1964, Percy Johnson-Marshall Collection, Edinburgh University Library. Several problems were mentioned, one of which that the rent to be asked, core to the experimental nature of the project, was not enough to cover the housing costs.
27. Interview by ScotMARK with Charles Robertson, ECA Grassmarket Campus, Edinburgh, 9 August 2006.
28. Letter from Charles Robertson to Robert Matthew, 15 March 1962, 'Review of the Present Position of Unit,' Percy Johnson-Marshall Collection, Edinburgh University Library.
29. Letter from 'George' to Percy Johnson-Marshall, 11 October 1963, Percy Johnson-Marshall Collection, Edinburgh University Library. 'George' was perhaps George Berry, a quantity surveyor who was also much involved with the finances of the Unit.
30. Letter from Charles Robertson to Robert Matthew, 15 March 1962, 'Review of the Present Position of Unit,' Percy Johnson-Marshall Collection, Edinburgh University Library.
31. Housing Research Unit, 'Proposed Fellowship in Housing,' paper of 16 January 1961, Percy Johnson-Marshall Collection, Edinburgh University Library.
32. Housing Research Unit, 'Progress Report of 1962,' Percy Johnson-Marshall Collection, Edinburgh University Library.
33. Housing Research Unit, 'Progress Report of 1962,' Percy Johnson-Marshall Collection, Edinburgh University Library.
34. Interview by ScotMARK with Charles Robertson, ECA Grassmarket Campus, Edinburgh, 9 August 2006.
35. It was originally hoped by Matthew that both the planning postgraduate course (headed by Percy Marshall) and the landscape architecture course (headed

by Frank Clark) should in due course generate their own research units, but this only happened in the planning case.

36. Glendinning and Muthesius, *Tower Block*, p. 189, pp. 257–8. For instance, 1962 witnessed a visit by Canadian architect Peter Bachelor, who was particularly interested in low-rise housing developments: Housing Research Unit, 'Research Staff Meeting Minutes,' 5 September 1962, Percy Johnson-Marshall Collection, Edinburgh University Library.

37. Interview by ScotMARK with Charles Robertson, ECA Grassmarket Campus, Edinburgh, 9 August 2006.

38. Interview by ScotMARK with John and Connie Byrom and Roland Wedgwood, Spring Gardens, Edinburgh, 9 August 2006, and Interview by ScotMARK with Charles Robertson, ECA Grassmarket Campus, Edinburgh, 9 August 2006.

39. The maximum net residential densities stipulated by the County of London Development Plan for new housing in inner boroughs were either 100, 136 or 200 persons per acre—levels which required, at the least, medium-rise rather than the Unit's more normal low-rise designs: Glendinning and Muthesius, *Tower Block*, p. 176, pp. 266–70; interview by ScotMARK with Charles Robertson, ECA Grassmarket Campus, Edinburgh, 9 August 2006 and Interview by ScotMARK with John and Connie Byrom and Roland Wedgwood, Spring Gardens, Edinburgh, 9 August 2006.

40. John Byrom went on to become head of the Landscape Department at Edinburgh University (after the death of Frank Clark).

41. Architecture Research Unit, *Achnaon Camping Ground, Glencoe, Argyll*, Edinburgh, August 1966.

42. Heffernan, David, *Difficulties-to-Let: What are the Difficulties? A Study of Two High Density Sixties Estates for the London Borough of Lewisham*, Edinburgh, 1977.

43. General background to Modern Movement research networks: M. Wigley, 'Network fever,' Grey Room, 4, 2001, pp. 96–7.

44. Interview by ScotMARK with Charles Robertson, ECA Grassmarket Campus, Edinburgh, 9 August 2006.

45. Although several notes of apology are included in the Percy Johnson-Marshall collection at the Edinburgh University Library; Housing Research Unit, 'Minutes of the first meeting of the HRU Advisory Committee,' 27 February 1962, Percy Johnson-Marshall Collection, Edinburgh University Library.

46. H. R. Wedgwood, 'Report of a Visit to America in the Autumn of 1960,' Percy Johnson-Marshall Collection, Edinburgh University; Wedgwood is styled 'Deputy Director of the Housing Research Unit' in this report.

47. N. Dunhill, *Housing Centre Study Tour of the Netherlands*, Edinburgh, June 1962: Percy Johnson-Marshall Collection, Edinburgh University Library.

48. Housing Research Unit, colloquium paper announced at Staff Meeting of 24 April 1962, Percy Johnson-Marshall Collection, Edinburgh University Library.

49. Housing Research Unit, 'Staff Meeting Minutes,' 16 May 1962, Percy Johnson-Marshall Collection, Edinburgh University Library.

50. Housing Research Unit, 'Staff Meeting Minutes,' 20 June 1962, Percy Johnson-Marshall Collection, Edinburgh University Library.
51. Architecture Research Unit, *Seminar on Architectural Research in the UK and Commonwealth Universities*, 5–10 January 1972.
52. Architecture Research Unit, *Seminar on Architectural Research in the UK and Commonwealth Universities*, 5–10 January 1972, chapter on the Edinburgh University Architecture Research Unit.
53. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.
54. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.
55. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.
56. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.
57. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.
58. Housing Research Unit, 'A Statement of the Present Situation', 1965, Percy Johnson-Marshall Collection, Edinburgh University Library.
59. Secretary of the University (Charles H. Stewart), letter to Percy Johnson-Marshall, 20 December 1963, Percy Johnson-Marshall Collection, Edinburgh University Library.
60. Secretary of the University (Charles H. Stewart), letter to Percy Johnson-Marshall, 20 December 1963, Percy Johnson-Marshall Collection, Edinburgh University Library.
61. Housing Research Unit, '1965 Progress Report,' Percy Johnson-Marshall Collection, Edinburgh University Library.
62. For instance, Charles Robertson could not think of any specific teaching responsibilities apart from the final year students using the (then) Architecture Research Unit library and occasionally asking for help with projects, although this was unofficial: interview by ScotMARK with Charles Robertson, ECA Grassmarket Campus, Edinburgh, 9 August 2006.
63. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.
64. Interview by ScotMARK with John and Connie Byrom and Roland Wedgwood, Spring Gardens, Edinburgh, 9 August 2006.
65. Housing Research Unit, 'Staff Meeting Minutes,' 14 February 1962, Percy Johnson-Marshall Collection, Edinburgh University Library.
66. Interview by ScotMARK with John and Connie Byrom and Roland Wedgwood, Spring Gardens, Edinburgh, 9 August 2006.
67. Interview by ScotMARK with Charles Robertson, ECA Grassmarket Campus, Edinburgh, 9 August 2006.
68. Interview by ScotMARK with Charles Robertson, ECA Grassmarket Campus, Edinburgh, 9 August 2006.

69. Architecture Research Unit, *Progress Report 1974*, Edinburgh, 1974. One of these was to be a historical study of the private subscription gardens and parks of the New Town of Edinburgh by John and Connie Byrom. This project was given a grant by the Social Sciences Research Council, and was to lead to a book or an article. The research was undertaken but the publication did not materialise until 2005.
70. Sir Robert Matthew, memo of 1974, and letter from Secretary of the University (Charles Stewart) to Robert Matthew, undated (about 1974), Matthew Collection, Edinburgh University Library Special Collections.
71. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.
72. Interview by ScotMARK with Andrew Gilmour, Gifford, East Lothian, 16 August 2006.